

Diagnosis and Successful Management of Acute Kidney Injury in a Leopard

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Acute kidney injury (AKI) is a sudden decline in renal function characterised by rapid accumulation of nitrogenous waste products in the blood (Bartges, 2012). In domestic cats and wild felids such as leopards, AKI is a common and potentially life-threatening condition. AKI in felids may result from pre-renal, renal, or post-renal causes depending on the underlying pathophysiology. Common pre-renal causes include dehydration, hypovolemia, shock, and severe haemorrhage (Ross, 2022). Renal causes of AKI in cats and leopards include nephrotoxic agents, ischemic injury, infectious diseases, and inflammatory renal disorders. Exposure to nephrotoxic substances such as ethylene glycol, aminoglycosides, NSAIDs, and certain plants is a frequent cause in domestic and captive felids.

CASE HISTORY AND OBSERVATIONS

A male leopard was presented to the Veterinary Clinical Complex, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Anand-388001 (Gujarat, India) with a history of lateral recumbency, dullness, depression. The animal had a traumatic wound on the ventral abdomen and difficulty in urinating (Fig. 1). An antiseptic dressing was applied as primary treatment. A total of 4 mL of blood was collected from the tail vein for haematological and serological parameters.

Complete blood count revealed WBC $37.77 \times 10^3/\mu\text{L}$, RBC $7.34 \times 10^6/\mu\text{L}$, haemoglobin 12.4 g/dL, HCT 39.31 %, and platelets $78 \times 10^3/\mu\text{L}$. Differential leukocyte count revealed 1.6% lymphocytes, 6.6% monocytes, and 91.8% neutrophils. Biochemical analysis revealed creatinine 2.50 mg/dL, SGPT 22.7 IU/L, Blood urea nitrogen 36.4 mg/dL, glucose 129.2 mg/dL, total protein 7.0 g/dL, albumin 2.84 g/dL and globulin 4.16 g/dL.

A thin blood smear was examined microscopically to rule out haemoprotozoal infection, that was found negative. Based on a high white blood cell count, moderate low haemoglobin level, high creatinine and BUN level, the case was diagnosed as acute kidney injury and was treated accordingly.

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Fig. 1: Leopard in lateral recumbency position with dullness

TREATMENT AND DISCUSSION

The case was confirmed as acute kidney injury based on serological examination. The animal was treated with fluid therapy (Ringer's lactate) at 15 mL/kg/h, antibiotics

(Amoxicillin + Sulbactam) at 15 mg/kg b.wt., and supportive medications such as nervine tonic and antihistamines. Antiseptic dressing and fluid therapy were recommended to continue for 5 days to manage the condition. An uneventful recovery was observed overall.

Stress from capture, translocation, or captivity can further worsen renal hypoperfusion and trigger AKI in leopards. Clinically, AKI in cats and leopards appears as anorexia, vomiting, lethargy, oliguria or anuria, and rapid systemic deterioration. Laboratory findings usually include azotemia, hyperphosphatemia, electrolyte disturbances, and metabolic acidosis. Early diagnosis of AKI remains difficult, especially in wild felids, due to limited clinical access and nonspecific early signs.

Novel biomarkers like symmetric dimethylarginine (SDMA) have enhanced early detection of kidney dysfunction in cats and show promise for use in exotic felids (Quimby and Dow, 2015; Segev *et al.*, 2024). Ultrasonography and urinalysis are valuable additional tools for assessing renal structure and function in affected animals. Ultrasonography is a noninvasive procedure that can be performed in most unstable patients, making it a useful first-line tool for the investigation of AKI (Cole *et al.*, 2019). Quick recognition and aggressive supportive therapy are vital for survival in feline AKI (Lam *et al.*, 2024). Management primarily involves fluid therapy, correction of electrolyte imbalances, and treatment of underlying causes. In leopards, treatment outcomes are often affected by delayed presentation and logistical challenges in wildlife settings (Stanzani *et al.*, 2015). Understanding the causes and progression of AKI, such as urine output in both domestic and wild felids, is a key to improving diagnosis and treatment strategies (Wilkinson, 2023).

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